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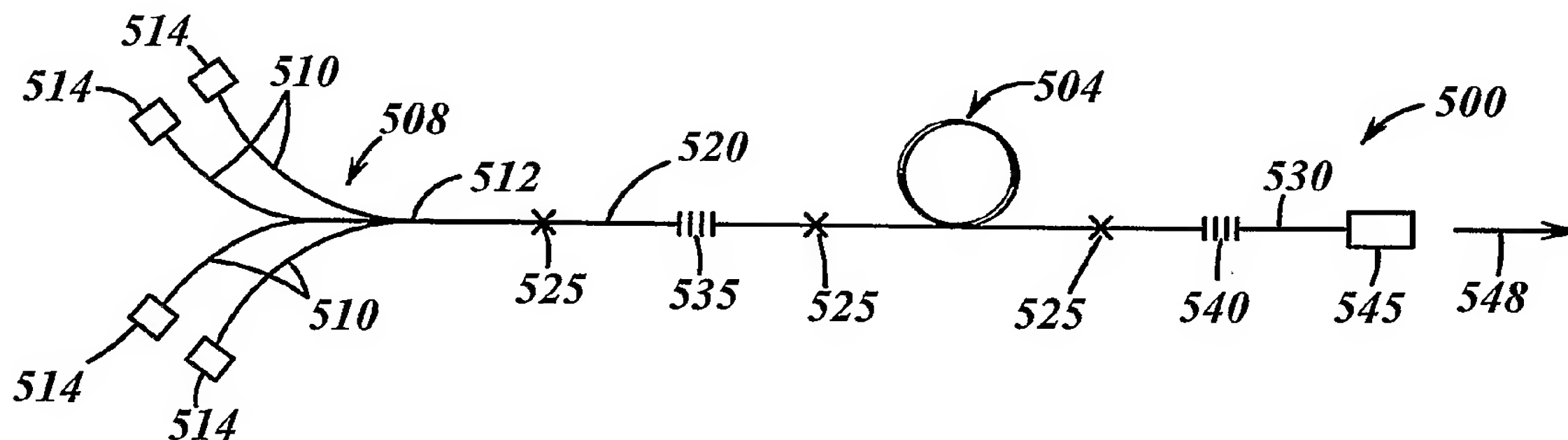
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(54) Title: METHOD AND APPARATUS FOR PROVIDING LIGHT HAVING A SELECTED POLARIZATION WITH AN OPTICAL FIBER



(57) Abstract: Optical apparatus (110, 500, 600, 800, 1000) for providing light having a selected linear polarization having a polarization ratio, the apparatus (110, 500, 600, 800, 1000) comprising a length of optical fiber (120, 504, 604, 804, 1001) comprising a rare earth for providing light having a first wavelength responsive to receiving pump light having a second wavelength that is different than said first wavelength, wherein if the length of optical fiber (120, 504, 604, 804, 1004) were placed in a first position between the length of fiber (120, 504, 604, 804, 1004) is substantially linearly oriented (20) the fiber (120, 504, 604, 804, 1004) could propagate at the first wavelength a fundamental mode and a plurality of higher order modes and the apparatus (110, 500, 600, 800, 1000) could provide light having a first polarization ratio for the selected linear polarization and an  $M^2$  parameter, and wherein the length of fiber (120, 504, 604, 804, 1004) is positioned in a second position that increases the bend loss of the fiber relative to the first position such that, responsive to the increased bend loss, the apparatus (110, 500, 600, 800, 1000) can provide light having a reduced  $M^2$  parameter as well as a second polarization ratio for the selected polarization that is increased relative to the first polarization ratio, the increase being at least 6 dB greater than the first polarization ratio, and wherein when the length of fiber (120, 504, 604, 804, 1004) is in the second position the apparatus (110, 500, 600, 800, 1000) can provide a slope efficiency that is at least 50 % of the ratio of the second wavelength to the first wavelength.



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